LIFTEKNIC

Com Tek-80

Operating Instructions

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Com Tek-80 Control System

D910MGB 04.2001

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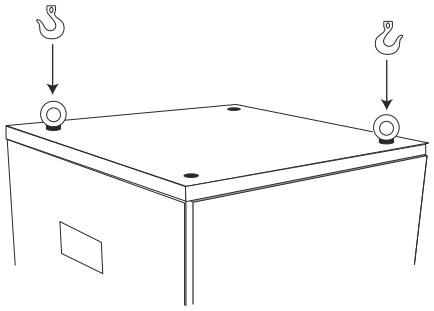
Table of contents ..... Page

1 General information prior to installation

1.1 Lifting

Always lift the cabinet using the lifting eyes provided (if fitted).



1.2 Liability and guarantee

These instructions are intended for use by personnel who are familiar with the installation and maintenance of lift / elevators. It is essential that they possess sufficient knowledge of lift / elevator construction.

Lifteknic does not accept responsibility for damage incurred through unauthorised or improper actions carried out in contradiction of these instructions thereby compromising the performance or integrity of the product.

The guarantee obligations of Lifteknic are rendered void if the equipment is used other than as described in these instructions.

No modifications / alterations to the circuits or components to be made without consultation and permission

1 General information prior to installation (continued)

1.3 Safety precautions

Installation or maintenance personnel working on Lifteknic products are responsible for their own safety.

Important safety advice and danger warnings are emphasised with the following symbols:


General danger warning.


High danger risk warning.


Potential component damage warning from improper installation.


Important information sign.

Observation of and adherence to all applicable safety regulations, guidelines and statutory instruments is the prerequisite for avoiding injuries to personnel and damage to the lift / elevator installation during its erection, maintenance and repair activities.

Reference B.S.7255 safe working on lifts.

These instructions must be retained in the lift / elevator installation's Operating & Maintenance manuals

In our continual program of development, changes and modifications will be made without notice.

This manual is not contract specific and must be read in conjunction with the contract electrical diagrams related to the specific lift installation(s).

1.4 Dependable reliability

To meet the rigorous demands of the lift environment, the Com Tek-80 incorporates full opto-isolation of all inputs, combined with robust relay outputs to provide an extremely rugged microprocessor interface section.

1.5 Design & build quality

The philosophy behind the Com Tek-80 is the same as all Lifteknic products, quality!
Only the highest quality components and manufacturing techniques are used throughout production, resulting in a highly reliable product that can be considered without question as "a sound investment in the future of a lift installation"!

1.6 Drive system integration

The Com Tek-80 is designed with a clear view of the future requirements of the lift industry.
The system is available to suit any type of the following drive formats up to 1.6m/s and can be adapted to suit most site conditions.

Hydraulic:	Berringer (feedback control)
	Blain (all types)
	GMV
	....others
Traction:	Single speed
	Two speed polechanger
	ACVV
	VVVF
	Vector
	DC Ward Leonard - geared

2 Hardware and software overview

The Com Tek-80 is a dedicated single board microprocessor lift control module for up to 4 floors FAPB, 3 floors full collective with an additional P.C.B. extension board for up to 11 floors FAPB 8 floors collective.

A typical Com Tek-80 microprocessor system will comprise of the following:

i) Power Supply.
ii) Com Tek-80 motherboard.
iii) Extension P.C.B. (when required)

2.1 Power Supply

An industry standard switch mode power supply is utilised. This features a wide input range and three separate outputs.

Input voltage:	85Vac - 250Vac
Output 1:	12Vdc @ 1.5A
Output 2:	5Vdc @ 3A
Output 3:	-12Vdc @ 0.3A (when required)

2.2 Central Processor Unit (CPU)

The CPU contains the Z80 microprocessor, the system operating software, of 2 serial ports, DIL switches, (for option configuration) 6 adjustable potentiometers to facilitate adjustment of timer values within the software.
A dual 7-segment display is present on this board, this may be used in several ways depending on the setting of some of the DIL Switches.

i) Lift position display
ii) Event codes for a range of events
iii) Software debug information

3 I/O (Input/Output)

The I/O structure on the main board provides 24 opto-isolated inputs, each with a dedicated red LED. 24 relay outputs, each with a dedicated green LED. This provides comprehensive indication of the status of every input and output, essential for effective event identification.
Two versions of extension board are available with two variants of I/O's to suit the specific requirements.
The I/O structure on the extension board provides 8 or 16 opto-isolated inputs, each with a dedicated red LED and 8 or 16 relay outputs, each with a dedicated green LED.

3.1 Complete Electrical Isolation

The Com Tek-80 has no electrical connection with the outside world. Incoming signals, every input is electrically isolated via opto-isolators. Every output is isolated via relay contacts.

Experience has highlighted the fact that problematic lift sites suffer from intermittent microprocessor lock-up, hang-up and sometimes catastrophic failure!
The majority of problems are caused by:

i) Electrical noise.
ii) Spikes.
iii) Induced voltages.
iv) 'Volt-drop' down cables.

All the foregoing conditions manifest themselves in a common lift motor room. These conditions and/or elements must be prevented from reaching the electronics of the microprocessor.

Each input incorporates analogue filtering to discriminate between a 'true' or 'false' condition. An input signal must be present for at least 8 milliseconds before it is accepted and lost for at least 25 milliseconds before it is cleared.
The nominal input voltage is 110Vac, the turn-on threshold is 70V whilst the turn-off threshold is 50V.

The relay contacts used for the output stage are able to switch a range of voltages, up to 250Vac or up to 120Vdc. 0.5A resistive.

4 Software

The software is written in ANSI 'C', this monitors its own performance to check for software corruption, variable corruption or illegal status. An event detected here is reset to a safe state and logged in the event logger.
The system has a hardware watchdog, which resets the processor and turns 'OFF' all the outputs.
The status of the watchdog circuit is shown by a green LED located bottom right on the board. (LED illuminated indicates the watchdog is OK).

4.1 Timing functions

The Com Tek-80 control system does not contain a real time clock nor does it contain any date dependent software no reference to days, dates, months or years used.
Timing within the lift control system is derived from a 100Hz 'tick' generated by the CPU hardware.
The 'tick' is generated when a counter, preloaded with a number, is decremented to zero via a frequency signal derived from the on board crystal oscillator.
Once the counter reaches zero, the 'tick' is generated and the counter is reloaded.
This high-speed 'tick' is used to:

i) Trigger the reading of inputs and writing to outputs.
ii) Control the system timer.
iii) Trigger high priority tasks (i.e. check safety signals and is the lift to slow).
iv) Operate the hardware watchdog circuit.

The system timer is used within the control system for sequencing and event timing. It is a 32-bit counter which is incremented every tenth of a second (derived from the 100 Hz 'tick'), this timer is reset to zero every time the power is turned off or a system reset occurs.
No problems will be experienced with the timer unless the system does not experience a reset or loss of power supply for a time in excess of 7 years, at which point the timer will reach zero and the hardware watchdog circuit will force a reset onto the control system.
As stated earlier, the operating software for the control system is written in ANSI 'C', except for the high-speed input/output functions which are written in assembler.
Although ANSI 'C' does have time and date handling functions, none of these utilities are used within the Com Tek-80 software.

4.2 Software timer implementation

i) Generation of a time delay

A 32-bit variable is loaded with the current value of the system timer plus the value of the time delay required. This variable is then compared with the number in the system timer. When the system timer is equal to or greater than this number, the timer has elapsed.

ii) Timing of an event

A 32-bit variable is directly loaded with the current value of the system timer, this value can then be compared with the system timer to measure relative times.

5 User Adjustable Timers

The Com Tek-80 includes six timers, adjustable via potentiometers located mid position on the printed circuit board. These timers are designated T1 to T6 with functions as detailed below. In each case, a timer is set to minimum when the potentiometer is rotated fully anti-clockwise and maximum when rotated fully clockwise.

T1 Door Dwell Time
Setting range = 3 to 30 seconds

Sets the amount of time the door remains open after each door open cycle. The timer is initiated by the activation of the door open limit with the doors closing automatically when the dwell time has expired. The door dwell can be over-ridden and the doors closed immediately by operating a car push or the door close push.

T2 Motor Run Time
Setting range = 20 to 45 seconds

Limits the amount of time that the motor is allowed to run without proving that movement of the lift car is taking place. The timer is initiated when the motor run signal is received and terminated upon loss of the same signal. The timer is reset during travel each time the lift passes a position stepping pulse (SU(1) or SD(1), depending on direction of travel). If the time limit is reached, the motor will be stopped immediately. In emergency mode, and the controller will cancel all calls and shut down the lift. The controller will only be reset after the loss and reinstatement of the safety circuit input LSR.

T3 Low Speed Time Limit
Setting range = 5 to 18 seconds

Limits the amount of time allowed for the lift to slow down and stop at its intended destination. The timer is initiated upon loss of the high speed signal and terminated upon loss of the motor run signal. If the time limit is reached the motor will be stopped immediately in emergency mode. The lift will be allowed to restart if further demands are made.

T4 TRACTION Buffer Shorting Delay
Setting range = 0 to 3.2 seconds

Sets the delay before the LS buffer shorting contactor is energised after loss of the high speed contactor. The timer is initiated upon loss of the high speed signal but is activated if the floor levelling signals are encountered before the time delay has elapsed.

T4 HYDRAULIC Relevelling Timer
Setting range = 6 to 18 seconds

Limits the time the motor is allowed to run in relevelling mode. When the timer is initiated, LSC is de-engergised and disables the relevelling. The output is also set if both levellers are lost. The lift returns to the bottom floor

T5 Advance Door Open Delay
Setting range = 0 to 3.2 seconds

Sets the delay before the doors are allowed to open after the door zone signal has been detected. The timer should be adjusted so that the doors are approximately halfway open when the lift comes to a stop.

T6 Back-up Stop Timer
Setting range = 0 to 3.2 seconds

Different functions are controlled according to the type of drive system. This timer controls the motor direction or brake.

6 CPU Switch Configuration - Switch Bank 1

Switch 1.1 - 1.4 Number of floors

Type - Binary (number of floors minus 2)

Option	1	2	3	4
2 floors	OFF	OFF	OFF	OFF
3 floors	ON	OFF	OFF	OFF
4 floors	OFF	ON	OFF	OFF
5 floors	ON	ON	OFF	OFF
6 floors	OFF	OFF	ON	OFF
7 floors	ON	OFF	ON	OFF
8 floors	OFF	ON	ON	OFF
9 floors	ON	ON	ON	OFF
10 floors	OFF	OFF	OFF	ON
11 floors	ON	OFF	OFF	ON

Switch 1.4 Full collective only

Same floor cancellation **dis**abled		OFF
Same floor cancellation **en**abled		ON

Switch 1.5 - 1.6 Type of control

Option	5	6
Full collective	OFF	OFF
Non-selective collective	ON	OFF
Down collective	OFF	ON
F.A.P.B.	ON	ON

Switch 1.7 - 1.8 Main floor & Fire floor selection

Option	7	8
Floor 1	OFF	OFF
Floor 2	ON	OFF
Floor 3	OFF	ON
Floor 4	ON	ON

<u>Note:</u> When the system is set for down collective, the lift will collect calls in the downward direction towards the main floor. The main floor call will always have an <u>up</u> call push.

6.2 Switch Bank 2

Switch 2.1 Homing select

Option	1
Homing enabled	OFF
Homing disabled	ON

Switch 2.2 Gong select

Option	2
Single pulse	OFF
1 pulse Up, 2 pulses Down	ON

Switch 2.3 - 2.4 Extension and absolute card selection

Option	3	4
Extension card NO	OFF	OFF
Extension card YES	ON	OFF
Absolute Position card YES	ON	ON

on MX version

2.3 Behind Call Cancelation
(must be on for anti-nuisance)

2.4 System Debug
Set to OFF for normal operation

Switch 2.5 Type of position indicator input signal

Option	5
Binary	OFF
Discrete (max. 5 floors)	ON

Switch 2.6 Type of Fire service

Option	5
Constant Pressure Door Close	OFF
Disabled Evacuation	ON

Switch 2.7- 2.8 Type of door operator

Option	7	8
Fully Automatic	OFF	OFF
Automatic with Behind Call Cancel	ON	OFF
Automatic Car, Manual Landing	OFF	ON
Manual Car & Landing	ON	ON

7 I/O Card Functions

All of the inputs into the Com Tek-80 microprocessor are dependant on the 110Vac supply from the main control circuit transformer TX1 via the control circuit fuse CCF.

I/O card 1 - Inputs

GL1 Gate lock 1
Monitors the state of the car gate contact. This signal must be present before a normal run is allowed. Loss of this signal during travel will cause an emergency stop of the lift.
The gate lock function check ensures that this signal is lost when the doors have opened fully. If the signal is still present with the doors fully open then the lift will be prevented from further operation.

GL2 Gate lock 2
Monitors the state of the landing gate contacts. This signal must be present before a normal run is allowed. Loss of this signal during travel will cause an emergency stop of the lift.
The gate lock function check ensures that this signal is lost when the doors have opened fully. If the signal is still present with the doors fully open, then the lift will be prevented from further operation.

DCL Door close limit
Monitors the state of the door close limit. This input should be OFF when the doors are in the fully closed position and on at all other times. The lift will be prevented from starting if this signal is not lost when the doors have closed. Once the lift has started the signal may be switched on again, as is the case when a stall condition is applied to the door operator during lift travel.

DOL Door open limit
Monitors the state of the door open limit. This input should be OFF when the doors are in the fully open position and ON at all other times. If this signal remains OFF with the doors fully closed, the gate lock function check ensures that the lift is prevented from further operation.

LU Up leveller switch
This input is used in conjuction with input LD for the door zone. It is also used to stop the lift when travelling in the down direction, after slowing at the appropriate point in the shaft. The floor levelling accuracy in the down direction is set using this input in conjunction with the levelling speed of the drive system.

LD Down leveller switch
This input is used in conjuction with input LU for the door zone. It is also used to stop the lift when travelling in the up direction, after slowing at the appropriate point in the shaft. The floor levelling accuracy in the up direction is set using this input in conjunction with the levelling speed of the drive system.

LSR Lift service available
Monitors the state of the primary safety circuit, including the position of the maintenance switch on the car top or on the control panel. This input must be present before the lift is allowed to perform any of its normal duties in automatic mode. Loss of this input signifies a primary safety circuit failure or the controller switched to maintenance mode

I/O Card Functions (continued)

BFR Bottom floor reset limit

Monitors the state of the bottom floor reset switch. When the input is ON, the reset switch is made and the microprocessor will synchronise its internal position counter to the bottom floor set within the system.

The lift uses the position of the bottom floor reset limit as its slowdown point during a terminal floor dive operation to allow a controlled stop at the bottom floor level.

TFR Top floor reset limit

Monitors the state of the top floor reset switch. When the input is ON, the reset switch is made and the microprocessor will synchronise its internal position counter to the top floor set within the system.

The lift uses the position of the top floor reset limit as its slowdown point during a terminal floor dive operation to allow a controlled stop at the top floor level.

Note: The reset limit signals are also used as direction checking devices, refer to description later in this manual.

SU Up slowing & stepping switch

Monitors the SU stepping signal in the shaft when travelling in the direction on high speed. The microprocessors' internal position counter is incremented on the leading edge of the signal. If a call is present at the next floor, the lift will slow down on the trailing edge of the signal.

SD Down slowing & stepping switch

Monitors the SD stepping signal in the shaft when travelling in the down direction on high speed. The microprocessors' internal position counter is decremented on the leading edge of the signal. If a call is present at the next floor, the lift will slow down on the trailing edge of the signal.

STEP SU & SD signals combined

SU & SD signals are combined to give one input.

MC Main contactor energised

Monitors the main travel contactor in the control circuit to indicate that the lift is moving. Failure of this signal to operate within a few seconds of a start being commanded will result in a start failure event. This will cause the doors to cycle and an event code to be registered before the a further attempt to start is made. Loss of this signal during travel will cause an emergency stop.

DOP Door open push

This input is operated by the door open push situated within the lift car. When the door open push is pressed, the doors will attempt to open as long as the lift is stopped within a valid door zone.

SE Safety edge

This input is operated by the safety detector situated on the car door leading edge. When an obstruction is detected by the safety edge the doors will attempt to re-open when they are closing.

This input is only active as long as the lift has stopped within a valid door zone.

I/O Card Functions (continued)

BB Photo-cell beam broken

This input is operated by the photo-cell beam positioned to detect passenger movement across the threshold of the lift car.
When passenger movement is detected by the photo-cell the doors will attempt to re-open if they are closing. The photo-cell is also used to modify door dwell times in high traffic situations.
This input is only active as long as the lift is stopped within a valid door zone but is also disabled after 15 seconds continuous operation and while the control system is operating in fire service mode.

SSIP Service control

To enable the lift to be used for operational activities, transportation of goods etc.
All landing calls are disabled and the doors park open. Constant pressure is required on the car call to close the doors and register a single call.

FSIP Fire control

The lift is under fire control or disabled evacuation.

Ancillary Inputs (if fitted)

WS90 Weight switch 90%

Load switch 90% input. Lift will by-pass all landing calls (collective systems only) until load is reduced to below 90% of contract load.

WS110 Weight switch 110%

Load switch 110% input. Lift will not start and remain with doors fully open until load is reduced to below 10% overload of contract load. An audible/visual indicator COLI is active during the overload.

DCP Door close push

This input is operated by the door close push situated within the lift car. When the door close push is pressed the doors will curtail any outstanding door dwell times and attempt to close the doors, as long as none of the door open or re-open devices are activated.

GCE Ghost call enable (hydraulic)

Used where the main floor is the bottom floor. The lift will operate (cycle) in conjunction with the hydraulic homing operation, approximately every 15 minutes.
This is useful for keeping the oil in the rams warm.

DHIP Door hold I/P

This input is operated by the door hold push situated within the lift car. When the door hold push is pressed, the doors will remain open for an extended door dwell time.

FAM Fire alarm management

The lift is under fire alarm management control. When the lift has returned to the fire floor level, no further movement is possible until either the FAM signal is disabled, or the lift is switched to fire control, FSIP.

8 I/O Card - Outputs

DOPR Door open pilot
Controls the door open contactor DOR which, providing the door open limit is closed and all other safety conditions are met, opens the doors.

DCPR Door close pilot
Controls the door close contactor DCR which, providing the door close limit is closed and all other safety conditions are met, closes the doors.

UR Up direction pilot
Initiates an UP travel in response to a call above the lift. The gate lock inputs must be present and all safety checks completed before the directional pilot relays are energised.

DR Down direction pilot
Initiates a DOWN travel in response to a call below the lift. The gate lock inputs must be present and all safety checks completed before the directional pilot relays are energised

HSP High speed run master control
Operates the HSR relay (or the HSC contactor on polechanger applications). This initiates a travel on high speed. Loss of HSP causes the high speed relay/contactor to switch OFF, initiating a slow down of the lift motor/hydraulics.

LSP Low speed run master control
This output is only used for polechanger applications to operate the LSC contactor. This contactor energises the low speed winding of the motor which slows the lift from high speed or starts the lift for inspection or inching operation.

LSB Low speed buffer shorting control
This output is only used for polechanger applications to operate the LCC contactor. When the motor is slowing from high speed this contactor LCC, energises a short time (T4 setting) after the energisation of the LSC contactor which shorts out the low speed buffer resistors. If the motor is starting on maintenance or inching control, this output will activate at the same time as the LSP output.

GNG Gong
Two modes of operation:-
1. Single pulse on slowing into floor level, Up and Down
2. Single pulse on slowing into floor level, Up and a double pulse on slowing into floor level Down.

HU Hall up
Up hall lantern. Indicates the cars next direction of travel is UP. Lit when slowing into floor and extinguishes as the doors start to close.

HD Hall down
Down hall lantern. Indicates the cars next direction of travel is DOWN.
Lit when slowing into floor and extinguishes as the doors start to close.

IU Indicator up
Indicates that the preferred direction of travel of the lift is UP. This extinguishes or changes when the highest call registered in the UP direction is reached and the doors start to open.

8 I/O Card - Outputs (continued)

ID Indicator down
Indicates that the preferred direction of travel of the lift is down. This extinguishes or changes when the highest call registered in the down direction is reached and the doors start to open.

BZR Buzzer
Warning when gates are open and a landing call is being requested on manual gate installations.

PO1 Position 1
This can be configured to give a discrete output signal, floor 1 or binary 1

PO2 Position 2
This can be configured to give a discrete output signal, floor 2 or binary 2

PO3 Position 3
This can be configured to give a discrete output signal, floor 3 or binary 4

PO4 Position 4
This can be configured to give a discrete output signal, floor 4 or binary 8

Ancillary outputs (if fitted)

NGR Door nudging select.
Controls the door nudging relay NGR, usually only a feature of DC controlled door operators. Forces the doors to close at a reduced torque and speed. Ignoring the safety edge and light ray broken beam inputs. The door open push input remains active during nudging.

HSB High speed buffer shorting control
This output is only used for polechanger applications with shorted starting resistances to operate the HCC contactor. This contactor HCC energises a short time (T6 setting) after the energisation of the HSC contactor. Shorts out the high speed starting resistors during a high speed start of the motor.

ACI Anti creep initiate (hydraulic)
In conjunction with input ACZ and the processor checking routine this ouput controls the functions of the relevelling circuitry.

FAN Fan
Output to control cabinet /car fans.

LISI/LOSI Lift in service / Lift out of service indicator
Lift in service indicator/buzzer or the complimentary signal of lift out of service indicator/buzzer.

COLI Car overload indicator
The car overload indicator / buzzer will operate only when the lift is stopped and WS110 input enabled.

FSI Fire service indicator
Fire service indicator/buzzer.

DHI Door hold indicator
Door hold indicator/buzzer.

SSI Special service indicator
Special service indicator / buzzer.

9 I/O Call allocation

Full collective

Input	Designation	Output	Designation	Call Acceptance
C1	CP1	A1	CA1	Car floor 1
C2	CP2	A2	CA2	Car floor 2
C3	CP3	A3	CA3	Car floor 3
C4	L2D	A4	I2D	Landing DOWN floor 2
C5	L3D	A5	I3D	Landing DOWN floor 3
C6	L1U	A6	I1U	Landing UP floor 1
C7	L2U	A7	I2U	Landing UP floor 2
C8	L3U	A8	I3U	Landing UP floor 3

This configuration will operate up to 3 floors

Extension P.C.B.

Input	Designation	Output	Designation	Call Acceptance
C9	CP4	A9	CA4	Car floor 4
C10	CP5	A10	CA5	Car floor 5
C11	CP6	A11	CA6	Car floor 6
C12	CP7	A12	CA7	Car floor 7
C13	CP8	A13	CA8	Car floor 8
C14	L4D	A14	I4D	Landing DOWN floor 4
C15	L5D	A15	I5D	Landing DOWN floor 5
C16	L6D	A16	I6D	Landing DOWN floor 6
C17	L7D	A17	I7D	Landing DOWN floor 7
C18	L8D	A18	I8D	Landing DOWN floor 8
C19	L4U	A19	I4U	Landing UP floor 4
C20	L5U	A20	I5U	Landing UP floor 5
C21	L6U	A21	I6U	Landing UP floor 6
C22	L7U	A22	I7U	Landing UP floor 7
C23	user	A23		
C24	user	A24	PO4	Position output 4 (Binary

This configuration will operate up to 8 floors

I/O Call allocation (continued)

FAPB, Down collective and non-selective collective

Input	Designation	Output	Designation	Call Acceptance
C1	CP1	A1	CA1	Car floor 1
C2	CP2	A2	CA2	Car floor 2
C3	CP3	A3	CA3	Car floor 3
C4	CP4	A4	CA4	Car floor 4
C5	LIU	A5	I1u	Landing UP floor 1
C6	L2D	A6	I2d	Landing DOWN floor 2
C7	L3D	A7	I3d	Landing DOWN floor 3
C8	L4D	A8	I4d	Landing DOWN floor 4

Extension P.C.B.

Input	Designation	Output	Designation	Call Acceptance
C9	CP5	A9	CA5	Car floor 5
C10	CP6	A10	CA6	Car floor 6
C11	CP7	A11	CA7	Car floor 7
C12	CP8	A12	CA8	Car floor 8
C13	L5D	A13	I5D	Landing DOWN floor 5
C14	L6D	A14	I6D	Landing DOWN floor 6
C15	L7D	A15	I7D	Landing DOWN floor 7
C16	L8D	A16	I8D	Landing DOWN floor 8
C17	CP9	A17	CA9	Car floor 9
C18	CP10	A18	CA10	Car floor 10
C19	L9D	A19	I9D	Landing DOWN floor 9
C20	L10Dd	A20	I10D	Landing DOWN floor 10
C21	CP11	A21		Car floor 8
C22	L11D	A22	I11D	Landing DOWN floor 11
C23	user	A23		
C24	user	A24	PO4	Position output 4 (Binary

This configuration will operate up to 11 floors

10 Basic Event Logger

The Com Tek-80 PCB includes a dual 7-segment LED display, each 7-segment LED's is configured to show 0 to 9 only.
This display indicates the present state of operation, event number and position of the lift for the last five events.

In the basic event logger mode there are three states:

	Left	Right
State 1	**Flashing**	**Flashing**
State 2	OFF	Event No
State 3	Floor No	Event type

State 1. Both displays are flashing.
This indicates the present status of the lift.
'00' indicates that the lift is operating normally. If an event is present, the right digit indicates the event number.

State 2. The left display is OFF.
The right display indicates the event number (1 to 5). This event number indicates the relative age of the event about to be displayed.
Event number 1 is the most recent and 5 is the oldest.

State 3. Both displays are ON.
The left display indicates the floor at which the event occurred. (0 being the bottom floor).
The right display indicates the event type.

The display sequence is as follows:

i)	**State 1**	Display present status (flashing).
ii)	**State2**	Display event number (1 to 5).
iii)	**State3**	Display the event and the floor at which it occurred.
iv)	**NEXT**	If last event go to state 1 else go to state 2.

10.1 Event Types

1 Fault detected in door safety circuit
2 Lift moving in wrong direction
3 Lift failed to start
4 Gate lock tipped during travel
5 MC feedback lost during travel
6 Low speed time limit tripped (Traction only)
6 Anti-creep re-levelling time limit tripped (Hydraulic only)
7 Motor run time limit tripped
8 Doors held open
9 Primary safety circuit lost or lift in test control
0 Software event

Events underlined:- Indicates events that prevent further operation of the lift, to bring the lift back into operation it is necessary to remedy the situation, power down and then restart the control system.

Note: *It is essential that the lift door operator's open and close limits are operating correctly in conjunction with the car gate contact Other wise, on returning to normal after an inspection operation the lift will not accept calls. Ensure that all systems are rechecked and correct for the micro processor, it is essential that the lift completes a round trip before returning into service.*

Event code descriptions.

Event 1 Fault detected in door safety circuit.

The purpose of this is to detect a short circuit on the Gate Lock Circuit. If a short is present the fault will be detected when the system cycles the doors before moving, or an arrival at a floor. If a direct short is not present this event can be generated by either the open or closed limits sticking ON. The status of the Gate Locks, both car and landing, are indicated by LED's on the Processor. The open and closed limits are also shown.

Note: *If both the door open & door closed limit input LED's are OFF, indicating that both limits are made, the lift will be rendered out of service.*

Event 2 Lift moving in wrong direction.

The direction of travel of the lift is verified by monitoring the operation of the terminal floor reset limits. If the lift is travelling in the UP direction and the bottom floor reset limit input is activated or the lift is travelling in the DOWN direction and the top floor reset limit input is activated, the lift will be forced to slowdown and/or stop immediately. The lift will be rendered out of service.

10.1 Event Types (continued)

Event 3 Lift failed to start

This firstly checks that the MC input is present, then checks to see if both levellers are lost (i.e. the lift escapes from door zone).

Failure of MC (motor running) to be made could be caused by motor overload, phase failure/reversal device, thermistor overload device or the terminal floor limits being broken.

The brake sticking on (traction) or oil bypassing (hydraulic) or defective levelling signals could cause fail to escape from door zone.

The lift will attempt to start three times. If all attempts fail, the lift will be rendered out of service for five minutes. It will attempt to restart. This is to allow any thermal, phase failure/reversal events to recover. If the lift still fails to start it will remain out of service.

Event 4 Gate lock tipped during travel

This is a transitory event; return of both of the GATE LOCK signals will enable the lift to move. If the signal is lost for more than two seconds (traction) or immediately if the system is hydraulic, all calls will be cancelled.

Event 5 Main Contactor feedback lost during travel

While the lift is travelling the MC (motor running) input is continually monitored. Should it be lost for more than one second, the movement relays are released. The lift will then try to restart so this event could appear as the second oldest, behind a start failure. The one-second delay is incorporated to prevent a gate locks tripped event being registered as MC feedback lost.

Possible causes of this event could be a motor overload trip, thermistor trip or a terminal-slowing limit encountered before a position reset limit.

Event 6 Low speed time limit tripped (traction only)

This event indicates that the lift has exceeded the time allowed for slowing into floor level. Timer T3 adjusts the time allowed for slowdown. If the event occurs the lift will stop immediately but is allowed to restart.

Event 6 Anti-creep re-levelling time limit tripped (hydraulic only)

This is detected by monitoring the status of the pump motor running input. Timer T3 adjusts the time allowed for re-levelling.

If this event occurs the lift is returned to the lowest level.

10.1 Event Types (continued)

Event 7 Motor run time limit tripped

This event indicates that although the lift motor running the lift has not registered sufficient movement within the set time period. The time period is adjusted with the timer T2. The time period is reset each time the lift registers a position stepping pulse (SU/SD). If the motor run time limit expires then the control system will perform an emergency stop and the lift will remain out of service until the control system is reset.

In the case of a hydraulic lift, this test is only carried out when travelling up (i.e. the pump motor running) the lift is returned to the lowest floor if the time limit is exceeded.

Event 8 Doors held open

This event indicates that the doors have been held open for an excessive amount of time. The event is not logged until the doors have failed to close on three consecutive attempts. All registered calls are cancelled and landing calls are disabled until the doors have been successfully closed.

Event 9 Loss of primary safety circuit or lift in test control

This event could be described as 'lift not available'. It is recorded when the LSR input is lost. This will be triggered by any of the primary safety circuit devices being activated and also when the system is switched on to car top or panel test control.

Event 0 Software event

This indicates that an internal register or variable has been corrupted or an illegal state has been detected. In this case the system will reset via the hardware watchdog circuit.

11 Man Machine Interface (MMI)

The Com Tek-180 has an optional facility for a 'Man-Machine Interface'.

This device comprises a dedicated control board mounted in the Com Tek-180 rack and a numeric/function keypad with ¼ VGA LCD screen mounted either on the Com Tek-180 card frame or on the controller door and provides the following enhanced user beneficial features.

1) English text logger

All of the events and event reports can be accessed via the Dynamic Interface with the additional benefit of English text to minimise errors in code reading and thus avoid wrong diagnosis of faults.

2) User Help Functions

The occurrence of an event can give rise to a 'Help' function.
The help function provides the engineer with simple to follow fault diagnosis tabulated proce dures. Although the system cannot guarantee 100% success with fault finding, the general awareness of engineers and operatives can be greatly enhanced.
Another importance aspect of the help function is that the dependence of a lift company or maintaining body can be greatly reduced i.e. not everybody needs to be a 'microprocessor expert' and the lesser skilled operative can have a better understanding of the lift system.

3) User Inputs

The Dynamic Interface allows an engineer to enter calls on the system then check the functionality of the lift with all the integrity and safety features remaining intact.

11 Man Machine Interface (continued)

Gate lock tripped
The gate lock circuit has been broken while the lift was travelling.
Suggestion:
Check the clearance of the landing door locks at the floor indicated in the fault display.

Direction error
The lift is travelling in the wrong direction, check the direction of travel and the top and bottom floor reset signals (TFR & BFR). This fault is detected when the BFR signal appears when going up or TFR when going down.

Fault in safety circuit
An error in the door lock circuit has been detected. Cheek for short circuits or bridges in the safety circuit or incorrect operation of the door limit circuits / micro switches. This fault can be caused by simultaneous loss of the OPEN & CLOSED LIMITS.

Double journey timeout
The lifts inter floor travel time has exceeded the allowed time limit. It is possible to extend this time by turning T2 clockwise.

Lift has failed to start
The main contactor has failed to activate. Any of the following could prevent the system from starting: Direction, speed or main contactors stuck, motor overload, thermistor or phase failure devices tripping.

Failed to escape from door zone
The car has failed to escape from door zone within 3 seconds of starting.
Check the brake is releasing, or one of the levelling signals may be sticking.

Main contactor dropped while moving
The main contactor signal has been lost while travelling. Possible causes, motor overload, phase failure or reversal, terminal limit set inside terminal floors, or terminal slowing limits set inside terminal floor resets.

Low speed timed out
The car has spent to long travelling at low speed, to extend this time either reduce the slowing distance or the time allowed can be extended by turning timer T3 clockwise.

Re levelling timed out
The lift has failed to re level within the allowed time; this time may be extended turning timer T4 clockwise.

Lift available signal lost
The LAR input to the system has been lost, this could be caused by an over travel limit being passed, emergency stop button being pressed, over speed device tripping controller power supply failing or the unit being switched into test.

Software fault
An inconsistency has been encountered in the software.

Lifteknic should be advised if this fault occurs!

11 Man Machine Interface (continued)

Unrecognised event
This event is not recognised.

Call push feed lost
The power supply feed to the call pushes has been lost. Check the call push feed fuse CPF.

Engineer arrived on site
The 'engineer on site' key switch has been activated.

Engineer has left site
The 'engineer on site' key switch has been cleared.

Password changed
The system password has been changed.

Password help info
The password is a number 0 - 9999 if set to 0 the feature is disabled. The password must be entered to reset the clock, clear the fault table and change the password. If you forget the number a coded version is displayed in SYSTEM MENU 6 Contact LIFTEKNIC with this code.

Correct password entered
The correct password was entered.

Fault logger activated
The logger has been interrogated; this event will not be re logged until the logger has been inactive for forty-five minutes. This event is not recorded if the event 'ENGINEER ARRIVED ON SITE' has recently been logged.

Event table cleared
The event table has been cleared.

System clock reset
This event is recorded if the time or date is changed.

12 Declaration of Conformity

We: LIFTEKNIC LTD.

herewith declare that:

Product type: **Com Tek-80**, Lift Control System

conforms with the provisions of:

EN 12015:1998	**Product family standard for lifts -**	**Emission**
EN 12016:1998	**Product family standard for lifts -**	**Immunity**

Issued:

Place: LIFTEKNIC, Wrexham

Date: 15/12/00

Authorised:

Name: Mr. D.A.Houghton

Position: Operations Manager

Signed: